



$$4. \quad P = \frac{a^2 \sqrt{3}}{4} \quad \frac{a^2 \sqrt{3}}{4} = 9\sqrt{3} \quad | : \sqrt{3} \quad | \cdot 4$$

$$a^2 = 36 \Rightarrow a = 6$$

$$R = \frac{2}{3}h = \frac{2}{3} \cdot \frac{6\sqrt{3}}{2} = \underline{2\sqrt{3}[\text{cm}]}$$

$$r = \frac{1}{3}h = \underline{\sqrt{3}[\text{cm}]}$$

$$5. \quad a) \quad \frac{3}{4}k + \frac{1}{2}s + t$$

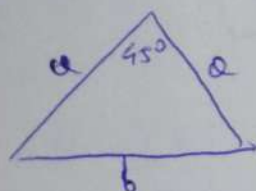
$$b) \quad s - \frac{1}{2}k.$$

gr. B

$$1. \quad |AB| = 12 \quad |BC| = 5 \quad \beta = 150^\circ$$

$$P = \frac{1}{2} \cdot 12 \cdot 5 \cdot \sin 150^\circ = 30 \cdot \frac{1}{2} = \underline{15}$$

2.



$$P = 9\sqrt{2}$$

$$9\sqrt{2} = \frac{1}{2} a^2 \sin 45^\circ \quad | \cdot 2$$

$$18\sqrt{2} = a^2 \cdot \frac{\sqrt{2}}{2} \quad | \cdot 2 \quad | : \sqrt{2}$$

$$36 = a^2 \Rightarrow \underline{a = 6}$$

z tw. cosinusów:

$$b^2 = 6^2 + 6^2 - 2 \cdot 6 \cdot 6 \cdot \cos 45^\circ$$

$$b^2 = 72 - 72 \cdot \frac{\sqrt{2}}{2}$$

$$b^2 = 72 - 36\sqrt{2} \Rightarrow b = \sqrt{72 - 36\sqrt{2}} = \underline{6\sqrt{2 - \sqrt{2}}}$$

Bole są długości  $6, 6, 6\sqrt{2 - \sqrt{2}}$ .

$$3. \quad a) \quad \frac{3}{4}k + \frac{1}{2}s + t$$

$$b) \quad s - \frac{1}{2}k$$



4.  $r = 1,5$   $p = 12$

o)

$\Downarrow$

$$12 = 1,5p \quad | :2$$

$$24 = 3p \Rightarrow p = 8 \Rightarrow \text{Obw} = 16$$

$$2a + 6 = 16$$

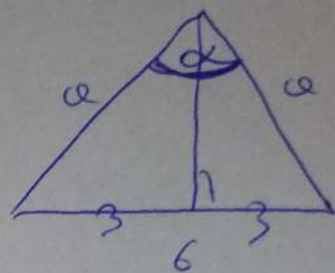
$$2a = 10$$

$$\underline{a = 5}$$

$$b) \quad R = \frac{a^2 \cdot 6}{4p} = \frac{25 \cdot 6}{48} = \frac{25}{8} = \underline{3 \frac{1}{8}}$$

c) z tw. sinusów:

$$\frac{6}{\sin \alpha} = 2R \Rightarrow \sin \alpha = \frac{6}{25} = 6 \cdot \frac{4}{25} = \underline{\frac{24}{25}}$$



5.  $p = \frac{a^2 \sqrt{3}}{4}$

$$9\sqrt{3} = \frac{a^2 \sqrt{3}}{4} \quad | \cdot 4 \quad | : \sqrt{3}$$

$$36 = a^2$$

$$a = 6$$

$$R = \frac{2}{3}h = \frac{2}{3} \cdot \frac{6\sqrt{3}}{2} = \underline{2\sqrt{3} \text{ [cm]}}$$

$$r = \frac{1}{3}h = \underline{\sqrt{3} \text{ [cm]}}$$